

1 Chapter Test

Solve the equation. Justify each step. Check your solution.

1. $x - 7 = 15$

2. $\frac{2}{3}x + 5 = 3$

3. $11x + 1 = -1 + x$

Solve the equation.

4. $2|x - 3| - 5 = 7$

5. $|2x - 19| = 4x + 1$

6. $-2 + 5x - 7 = 3x - 9 + 2x$

7. $3(x + 4) - 1 = -7$

8. $|20 + 2x| = |4x + 4|$

9. $\frac{1}{3}(6x + 12) - 2(x - 7) = 19$

Describe the values of c for which the equation has no solution. Explain your reasoning.

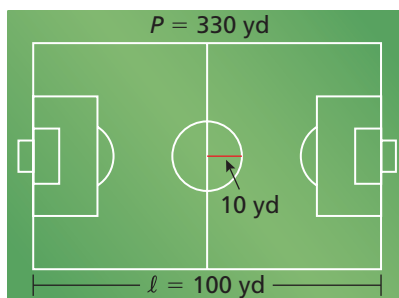
10. $3x - 5 = 3x - c$

11. $|x - 7| = c$

12. A safety regulation states that the minimum height of a handrail is 30 inches. The maximum height is 38 inches. Write an absolute value equation that represents the minimum and maximum heights.

13. The perimeter P (in yards) of a soccer field is represented by the formula $P = 2\ell + 2w$, where ℓ is the length (in yards) and w is the width (in yards).

- Solve the formula for w .
- Find the width of the field.
- About what percent of the field is inside the circle?



14. Your car needs new brakes. You call a dealership and a local mechanic for prices.

	Cost of parts	Labor cost per hour
Dealership	\$24	\$99
Local Mechanic	\$45	\$89

- After how many hours are the total costs the same at both places? Justify your answer.
 - When do the repairs cost less at the dealership? at the local mechanic? Explain.
15. Consider the equation $|4x + 20| = 6x$. Without calculating, how do you know that $x = -2$ is an extraneous solution?
16. Your friend was solving the equation shown and was confused by the result “ $-8 = -8$.” Explain what this result means.

$$\begin{aligned}
 4(y - 2) - 2y &= 6y - 8 - 4y \\
 4y - 8 - 2y &= 6y - 8 - 4y \\
 2y - 8 &= 2y - 8 \\
 -8 &= -8
 \end{aligned}$$